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BSH HOME APPLIANCES CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
100 BOSCH BOULEVARD
NEW BERN, NC 28562

EXAMINER	
WARTALOWICZ, PAUL A	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/824,233
Filing Date: April 14, 2004
Appellant(s): JORDENS ET AL.

Russell W. Warnock
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/01/07 appealing from the Office action mailed 11/24/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,888,790	Chay	6-1975
6,517,899	Hoke et al.	2-2003

3,993,597	Stiles	11-1976
5,051,185	Watanabe	9-1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 13, and 33-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Examiner requests the Applicant to point out the recitation in the specification where support for the amendments are located.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 13-17, 23-25, 28-30, 33, 34, 35, 36, 37 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chay (3888790) in view of Hoke et al. (U.S. 6517899).

Chay teaches a porous ceramic catalytic coating for use in self-cleaning ovens and pollution control devices (Column 1, lines 10-12) wherein the coating includes a silicate binder (Column 3, lines 37-44) and also includes porous particles of a refractory material which may be metal oxides of Si, Al, Ti, or Zr (Column 3, lines 4-12) and which porosity includes open-cell pores. Chay teaches the metal oxides (refractory) particles are a "fine powder" (Column 3, line 29) and further that the oxides particles be less than 74 μm (Column 5, lines 24-23). Chay also teaches that the coating is porous and able

to absorb water (col. 12, lines 13-17) such that it would be obvious that the pores between the catalytic particles allow for solids and liquids to enter therein.

Further, with particular respect to claim 13, as the binder taught by Chay is a silicate it would inherently be "substantially permanently temperature resistant up to substantially 500°C" as claimed.

As to the limitation that the binder comprises an inorganic polymer or an inorganic sol, Chay teaches an amorphous binder phase comprising borosilicate glass, this disclosure is substantially similar to that of a glass polymer (col. 3, lines 37-45).

If this disclosure does not meet the limitation of an inorganic polymer, Hoke et al. teach a process for making catalytic compositions (col. 1, lines 18-19) wherein it is known to use water based silicone polymer emulsions as binders in high temperature applications for the purpose of producing a silica network (col. 51, lines 39-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a water based silicone polymer emulsions as binders in high temperature applications in Chay in order to produce a silica network (col. 51, lines 39-52) as taught by Hoke et al.

As to the limitation wherein said first pores are less than 1 μm in diameter in order to prevent a solid or liquid from entering therein, Chay teaches that the oxides give the optimum combination of porosity and hardness.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the pore size, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re

Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the pore size by the reasoned explanation that Chay teaches that it is known to optimize porosity to achieve the desired properties of the end product.

As to claims 35-36 and 38, the combined prior art teach a substantially similar product as that of the claimed invention (i.e. porous particles, binder) such that any properties of the membrane formed by the binder of the combined prior art would be substantially similar as the properties of the membrane formed by the binder of the current invention.

Claims 13-15, 17, 20-25, 32, 33, 34, and 35-36 and 38 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stiles (3993597) in view of Hoke et al. (U.S. 6517899) and Watanabe (5051185).

Stiles teaches a catalytic composition for coating the surfaces of cooking devices (Column 1, lines 13-15) wherein the coating includes a silicate binder (Column 4, lines 52-58) and porous metal oxide particles which may be a refractory material such as oxides of Al, Ti, B, Si and specifically teaches TiO2, ZrO2and SiO2 (Column 5, lines 30-40 and 45-49) which have open porosity. Stiles additionally teaches that other oxides may be added for pigment (Columns 5-6, lines 64-4). Stiles teaches that water is absorbed in the coating (col. 8, lines 54-68) such that it would be obvious that the pores between the catalytic particles allow for solids and liquids to enter therein.

Further, with particular respect to claim 18, as the binder taught by Chay is a silicate it would inherently be "substantially permanently temperature resistant up to substantially 500°C" as claimed.

If this disclosure does not meet the limitation of an inorganic polymer, Hoke et al. teach a process for making catalytic compositions (col. 1, lines 18-19) wherein it is known to use water based silicone polymer emulsions as binders in high temperature applications for the purpose of producing a silica network (col. 51, lines 39-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a water based silicone polymer emulsions as binders in high temperature applications in Stiles in order to produce a silica network (col. 51, lines 39-52) as taught by Hoke et al.

As to the limitation wherein said first pores are less than 1 μm in diameter in order to prevent a solid or liquid from entering therein, Stiles teaches that the particles are substantially water-insoluble (col. 5, lines 30-35). Stiles is however silent as the pore size of these particles.

Watanabe et al. teaches that is known for particles that are water-insoluble, the pore size of said particles is less than 50000 angstroms (0.5 μm, col. 9, lines 35-41)

It would have been obvious to one of ordinary skill in the art to provide particles with a pore size of are less than 1 μm in diameter because Stiles teaches that the particles are substantially water-insoluble (col. 5, lines 30-35) and it is known that particles that are porous and water-insoluble have a diameter of less than 50000 angstroms (0.5 μm, col. 9, lines 35-41) as taught by Watanabe et al.

As to claims 35-36 and 38, the combined prior art teach a substantially similar product as that of the claimed invention (i.e. porous particles, binder) such that any properties of the membrane formed by the binder of the combined prior art would be substantially similar as the properties of the membrane formed by the binder of the current invention.

It is noted that the heading of this rejection did not originally include claims 35-36 and 38. However, it was clear from the rejection and applicant treated this rejection as including these claims. They are included in the heading now for the purposes of clarification.

Claim 19 and 27 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chay (3888790) in view of Hoke et al. (U.S. 6517899) as described with respect to claim 13 above.

Chay teaches that the binder can be formulated from commercially available frits (Column 5, lines 3-7) and that upon mixing with the other coating components such be ball milled since the frit must be reduced to a fine powder of less than 74μm (Column 6, lines 50-55).

Claims 16, 19, and 27-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stiles (3993597) in view of Hoke et al. (U.S. 6517899) and Watanabe (5051185) as described with respect to claim 13 above.

Stiles teaches in several examples that the particle sizes for the various components are: less than 35 μm (Column 9, line 28; Column 11, lines 11), less than 25 μm (Column 11, line 18), and in the range of 2-15 μm (Column 11, lines 47-48). If this does not anticipate the claimed ranges for each specific component, it would be obvious for the components to have these sizes because to provide a more even coating and the desired porosity.

(10) Response to Argument

Applicant argues that the limitations of instant claim 13 have support in the specification, including the limitation wherein spaces between adjacent particles form second pores which allow for solids and liquids to enter therein.

However, the recitation of the specification that applicant is pointing to discloses that spaces between adjacent particles form second pores which allow for soils to enter therein. It is unclear why applicant uses the phrase "solids and liquids" instead of soils as disclosed in the specification. Regardless, "soils" is not a term of art defined as "solids and liquids." Soil is most likely defined as solids. Therefore, this limitation does not have support in the specification.

This remark is reiterated for claims 37 and 38 as both these claims include the limitation "solids and liquids" where it appears that only "soils" has support in the specification.

Applicant argues that Chay and Stiles do not disclose a binder which is "a colloidal solution comprising one of an inorganic polymer and inorganic sol, wherein

said colloidal solution is formed with at least..." and Chay and Stiles instead have binders which are formed without the use of an inorganic polymer or an inorganic sol.

However, Chay teaches the amorphous binder phase consisting of reaction products of oxides of boron and silicon and alumina to form a borosilicate glass. This describes a polymerization glass process. Stiles is not relied upon to teach an inorganic polymer in the binder but does teach that the binder comprises silica.

Applicant argues that Chay and Stiles are silent with respect to forming second pores that allow for solids and liquids to enter therein and while Chay discusses forming ceramic catalysts having high porosity, Chay is silent with respect to the size of the porosity and specifically with whether said pores prevent a solid or liquid from entering therein.

However, Stiles discloses porosity tests conducted to determine how much water is trapped by the coating and indicated the porosity of the catalytic coating (col. 8, lines 34-68). Chay similarly teaches that the coating absorbs water (col. 12, lines 12-16). Chay is not relied upon to teach the size of the porosity of the particles and whether or not solids and liquids are prevented from entering said pores. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that neither Stiles, Hoke, or Watanabe disclose an inorganic binder being temperature resistant up to about 500 degrees Celsius wherein the inorganic binder includes colloidal solution having ZrO_2 particles in liquid phase.

However, as stated in the rejection of record, with particular respect to claim 13, as the binder taught by Chay is a silicate it would inherently be "substantially permanently temperature resistant up to substantially 500°C" as claimed.

Additionally, Stiles additionally teaches that at a temperature of 649°C, the film loses no more than 15% of it's initial porosity (col. 10, lines 15-20).

Applicant argues that Chay and Stiles do not disclose a substrate with a self-cleaning coating thereon as recited in claim 37; the prior art does not disclose the coating having particles having first pores therein, wherein spaces between adjacent particles form second pores which are larger than the first pores such that the first pores prevent a solid or liquid from entering therein and the second pores allow for solids and liquids to enter therein.

However, Chay teaches that the catalyst particles have an optimum combination of porosity and hardness. It would have been obvious to one of ordinary skill to find the optimum porosity based upon the desired end properties of the product. Stiles teaches that the particles are substantially water insoluble (col. 5, lines 30-37). From these disclosures, it appears that the particles having first pores preventing solids or liquids from entering therein and spaces between adjacent particles forming second pores that allow solids and liquids therein is taught by the prior art.

Applicant argues that although Hoke includes a binder, there is no indication that the Hoke coating would withstand temperatures in excess of 500°C.

However, Hoke is relied upon for the teaching of using an inorganic binder in high temperature applications in order to produce a silica network. Hoke is not relied upon to teach withstanding temperatures in excess of 500°C or that the binder is permeable to liquids or solids. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Additionally, applicant points out that Hoke is directed to a process for coating a truck radiater that reduces pollution. It appears that applicant is arguing that Hoke is non-analogous art. However, it is well settled that prior art can be in the field of endeavor of the invention or logically would have commended itself to an inventor's attention in considering his or her invention as a whole. MPEP 2141.01(a). In the instant case, one of ordinary skill would be motivated to look to Hoke to solve the similar problem of forming a silica network in Chay.

Applicant argues that water-based silicone polymer emulsions as applied are not an inorganic polymer.

However, a water-based silicone polymer emulsuion is an inorganic polymer. It is unclear why applicant has stated that a silicone polymer that is water-based is not an inorganic polymer.

Applicant argues Watanabe has no application to the current field of endeavor because there is no applicability of a particular carrier designed to take B2-microglobulin deep into the pores of the porous particles and that of the current binder.

However, it is well settled that prior art can be in the field of endeavor of the invention or logically would have commended itself to an inventor's attention in considering his or her invention as a whole. MPEP 2141.01(a). In the instant case, Watanabe is relied upon to teach that it is known to provide particles with a pore size of are less than 1 μm in and that it is known that particles that are porous and water-insoluble have a diameter of less than 50000 angstroms (0.5 μm, col. 9, lines 35-41). This disclosure is very applicable to the instant problem of the invention of providing a particle that is water-insoluble. Therefore, the disclosure of Watanabe is applicable prior art in the rejection of record.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Paul Wartalowicz

Conferees:

Stanley Silverman

Kathryn Gorgos